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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,101

09/15/2006

Shinsuke Takeguchi

043888-0507

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03/03/2010

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EXAMINER

BEST, ZACHARY P

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/03/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,101	Applicant(s) TAKEGUCHI ET AL.	
	Examiner Zachary Best	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20090915</u> . | 6) <input type="checkbox"/> Other: _____ |

POLYMER ELECTROLYTE FUEL CELL

Examiner: Z. Best S.N. 10/593,101 Art Unit: 1795

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. Claim 1 and 4-6 are objected to because of the following informalities: The phrase “not against the gravity direction, but in the gravity direction” is repetitious. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 recites the limitation “the position is the midstream portion.” However, the position is already defined by Claim 1 as the “upperstream portion.” The position cannot be two positions.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (US 6,322,915 B1) in view of Blank et al. (US 2004/0028985 A1).

Regarding Claim 1, Collins et al. teach a polymer electrolyte fuel cell comprising a membrane electrode assembly (46) comprising an anode comprising a catalyst layer (50), a cathode comprising a catalyst layer (52), and a polymer electrolyte membrane (48) which is provided between the anode and the cathode and has hydrogen-ion conductivity (fig. 2), and a pair of conductive separators (flow field plates, 86 and 88) which are arranged in such a manner as to hold the membrane electrode assembly between them (figs. 2-3) and which has a first gas flow path having a fuel gas inlet for feeding fuel gas to the anode and a fuel gas outlet for discharging fuel gas from the anode formed on the main surface facing the anode (figs. 1-3) and a second gas flow path having an oxidant gas inlet for feeding oxidant gas to the cathode and an oxidant gas outlet for discharging oxidant gas from the cathode formed on the main surface facing the cathode (figs. 1-3), characterized in that the cell is arranged in such a manner that the direction normal to either of the main surface facing the anode and the main surface facing the cathode of the pair of separators intersects the a downward axis (figs. 1-3), the fuel gas inlet and the oxidant gas inlet are formed close to each other and the

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fuel gas outlet and the oxidant gas outlet are formed close to each other in the pair of separators (fig. 1), the first gas flow path and second gas flow path are so formed that the fuel gas and oxidant gas as a whole flow through the first gas flow path in the downward direction, the main surface facing the anode of the polymer electrolyte membrane of the membrane electrode assembly has a first notched portion formed, where the catalyst layer is not formed (fig. 2), the main surface facing the cathode of the polymer electrolyte membrane of the membrane electrode assembly has a second notched portion formed, where the catalyst layer is not formed (fig. 2), and the first and second notched portions are formed in such positions that they are overlapped at least in part when viewed from the direction almost normal to either of the main surface facing the anode and the main surface facing the cathode of the polymer electrolyte membrane (fig. 2), the first notched portion of the polymer electrolyte membrane has a first reinforcement member arranged having gas permeability (fig. 2), the second notched portion of the polymer electrolyte membrane has a second reinforcement member arranged having gas permeability (fig. 2), the polymer electrolyte membrane is supported in the first and second notched portions in such a manner that the polymer electrolyte membrane is held between the first reinforcement member and the second reinforcement member (fig. 2), the position is the upstream portion of the first flow path and the second flow path (figs. 1-3), and the first gas flow path and the second gas flow path are provided in such a manner as to be parallel to each other (figs. 1-3). However, Collins et al. is not specific as to the downward axis being the gravity direction.

Blank et al. teach a polymer electrolyte membrane wherein the reaction gas supply ports are positioned in such a way that the reaction gases will flow in the direction of gravity so they will not fight the force of gravity in order to flow (par. 19). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to create the fuel cell of Collins et al. wherein the downward axis the gravity direction because Blank et al. teach the reaction gases will flow in the direction of gravity so they will not fight the force of gravity in order to flow.

Regarding Claim 5, Collins et al. teaches the anode and the cathode each have a gas diffusion layer provided outside the catalyst layers, and the first reinforcement member and the second reinforcement member are made up of part of the gas diffusion layers (fig. 2).

Regarding Claim 6, Collins et al. teach the ratio of the first notched portion to the total area of the first gas flow path and the ratio of the second notched portion to the total area of the second gas flow path are 5-50%, respectively (fig. 2). Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust said ratio because Collins et al. suggest the amount of the humidification zone (notched portion) affects the cooling/water amount with regard to humidity (col. 7, lines 51-63).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. and Blank et al. as applied to Claims 1 and 5-6 above, and further in view of Saito (JP 09-139215).

Regarding Claim 4, Collins et al. and Blank et al. teach the fuel cell as recited above. However, Collins et al. and Blank et al. fail to teach the position is the midstream portion.

Saito teach a fuel cell wherein a nonreactive part (27) is provided in the midstream portion so as to halve the anode (24) or cathode (26), thereby causing no cell reaction (abstract), the advantages of which are known by Collins et al. (col. 7, lines 51-63).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to create the fuel cell of Collins et al. and Blank et al. wherein a nonreactive part is provided in the midstream portion because Saito teaches there will be no cell reaction at that point. Alternatively, simple substitution of one known element for another to obtain predictable results is obvious. See *KSR International Co. v. Teleflex Inc.* 550 U.S. ___, 82 USPQ2d 1385 (2007).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Best whose telephone number is (571) 270-3963. The examiner can normally be reached on Monday to Thursday, 7:30 - 5:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Zachary Best/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795